159 ~~107~~. A method according to claim 145 ~~92~~, further comprising a step of isolating ~~said~~ produced hydrogen atoms having a binding energy of about $E_b = 13.6/n^2\ eV$, where n is a fraction whose numerator is 1 and denominator is an integer greater than 1.

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Remarks

Claims 52-107 are pending in the application. Original claims 1-51 have been canceled and claims 52-107 have been added to the application. No new matter has been introduced by this amendment.

Response to Restriction Requirement

Restriction to one of the following inventions has been required:

I. Claims 1-37, drawn to a cell including means for causing hydrogen to undergo a transition to an energy state lower than n=1; and

II. Claims 38-51, drawn to a method for extracting energy from hydrogen atoms.

Claims 1-37, drawn to a cell, have been canceled in favor of new claims 52-91, also directed to a cell. Likewise, original claims 38-51, drawn to a method for extracting energy from hydrogen atoms, have been replaced by new claims 92-107. Claims 52 (cell) and 92 (method) are independent.

Applicants provisionally elect the subject matter of Group II (originally claims 38-51, now claims 92-107) for immediate prosecution. The election is made with traverse.

Examiner alleges that restriction is proper pursuant to MPEP 806.05(e) because the process of the invention can be practiced by another and materially different apparatus,

namely an apparatus which does not include a vessel capable of containing a vacuum or pressure greater than atmospheric. Claims 52 and 92, the new cell and method base claims, both recite the feature whereby a reaction occurs within the cell at a pressure *less than atmospheric*. The apparatus and method, *as claimed*, are therefore sufficiently related to require examination in a single application. Reconsideration and withdrawal of the restriction requirement is respectfully requested.

<u>Support for Specification and Claim Amendments</u>

The specification has been amended to state that the cell can have a boat or container, which is connected to the reaction vessel, for containing the material used for forming the catalyst. Support for this feature is found in claim 10 of the specification as originally filed.

Also, the specification has been amended to recite that the catalyst may be an ionic compound which is resistant to hydrogen reduction as described in claim 12 of the specification as originally filed.

The specification has been amended to recite that the gaseous catalyst is adapted to provide gaseous ions. Support for this feature is found in claim 22 as originally filed.

New claims 52 and 92 are directed to a cell or method of extracting energy from hydrogen atoms at a pressure less than atmospheric pressure. Support for claims 52 and 92 may be found throughout the specification, such as at page 21, lines 13-21, page 30, lines

15-21, and page 31, lines 7-14. Support for claims 52 and 92 may also be found in claim 44 of the application as originally filed.

Claims 53, 54, 94 and 95 are directed to a cell or method of extracting energy where the transition catalyst is atomic hydrogen. In particular, the catalyst in claims 53, 54, 94 and 95 is atomic hydrogen having a binding energy of about $E_b = 13.6/n^2\ eV$, where n is a fraction whose numerator is 1 and denominator is an integer greater than 1, as described in the specification at page 13, lines 5-15. Claims 55-58, 93 and 94 relate to a cell or method where hydrogen atoms are provided by dissociating molecules containing hydrogen atoms. Support for claim 93 is found at page 65, lines 24-35. More specifically, claims 55-57 and 94 are directed to a second catalyst for dissociating molecules containing hydrogen atoms as described in the specification at page 39, lines 14-25, page 40, lines 17-27, and page 62, lines 32-36. In claims 58 and 59, a valve controls the flow of molecules containing hydrogen atoms which may contact a second catalyst as described at page 75, lines 10-17.

The gaseous catalyst may sublime, boil or volatize when heated as claimed in claim 59 and described at page 3, lines 30-33, and page 67, lines 4-7.

Claims 60-66 relate to gaseous catalysts which are salts. In particular, claims 62-64 relate to salts of rubidium and potassium. Support for claims 60-66 is found at page 67, lines 18-21.

Claim 67 is directed to a gaseous catalyst which is an ionic compound resistant to reduction by hydrogen atoms as found in claim 12 of the specification as originally filed and as amended after line 7 on page 68.

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Claim 68 relates to a gaseous catalyst adapted to provide gaseous ions as supported by original claim 22.

Claims 69, 71-73 and 103-105 relate to specific temperature and pressure ranges for a cell or method of extracting energy. A cell maintaining a temperature of about 50°C above the melting point of the catalyst is claimed in claims 69 and 71. Support for claims 69 and 71 is found at page 68, lines 13-20. A cell maintaining a hydrogen pressure of about 200 millitorr is claimed in claim 72. Support for claim 72 is found at page 68, lines 20-22. Claims 103 and 105 are directed to a method of extracting energy from hydrogen atoms with the same temperature and pressure ranges as specified in claims 69, 71, 72. Support for claims 103 and 105 may also be found at page 68, lines 13-20, and page 68, lines 20-22.

Claim 70 relates to a cell wherein the catalyst is molten. Support for a molten catalyst is found at page 2, lines 14-18: "one of a solid, **molten**, liquid and gaseous source of energy holes". That the energy hole is a catalyst is apparent from page 2, lines 2-11.

Claim 74 relates to a cell with a valve for selectively releasing the lower energy hydrogen atoms from the cell. Support for claim 76 is found at page 51, line 34, to page 52, line 1.

A cell or method of extracting energy utilizing a gaseous transition catalyst which has its vapor pressure dependent on temperature is claimed in claims 76 and 106 and disclosed at page 77, lines 21-28. A cell having a heater to heat the contents of the cell is claimed in claim 77 and described at page 52, lines 28-31.

Claims 78-81 are directed to a cell with a catalyst reservoir for the transition catalyst separate from the reaction vessel as discussed at page 67, lines 1-3 and as amended after line 3 on page 67. More specifically, claim 79 defines a heater for heating the transition catalyst. Support for this feature is found in the specification at page 76, lines 16-22.

Claims 82-89 relate to a cell having a chamber for containing hydrogen atoms or a source of hydrogen atoms which communicates with the reaction vessel. Support for claims 82 and 83 is found at page 52, lines 15-19, and page 54, lines 26-29. Hydrogen atoms may be produced by pyrolysis in an internal combustion engine as claimed in claim 84 and discussed at page 80, lines 18-26.

A tungsten capillary heated to between 1800 and 2000 K may be used to produce hydrogen atoms as described at page 66, lines 21-27, and claimed in claims 87 and 101. Claims 87 and 100 relate to the use of an inductively coupled plasma flow tube for producing hydrogen atoms. Support for claims 87 and 100 is found at page 66, lines 29-35. A valve may control the flow of molecules containing hydrogen atoms over a tungsten capillary or into an inductively coupled plasma tube as claimed in claims 86 and 88. The power dissipated in an inductively coupled plasma flow tube may be controlled by a power controller as claimed in claim 89. Support for claims 86, 88 and 89 is found at page 77, line 30, to page 78, line 7.

Claim 90 relates to a cell with a heat exchanger for removing energy produced in the cell. Support for claim 90 is found at page 38, lines 2-9. The cell may also have a power gauge to measure the amount of energy produced in the cell as claimed in claim 91. Support for claim 91 is found at page 79, lines 24-26.

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Claim 107 relates to a method of producing and isolating hydrogen atoms having a binding energy of about $E_b = 13.6/n^2\ eV$, where n is a fraction whose numerator is 1 and denominator is an integer greater than 1, as described in the specification at page 51, line 34, to page 52, line 1, and page 90, line 28, to page 91, line 19.

Respectfully submitted,

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